

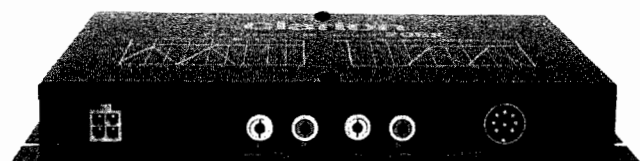
# clarion Service Manual

Published by Service Administration Section

## Electronic Crossover

# 20EX

## Model EE-725B-01



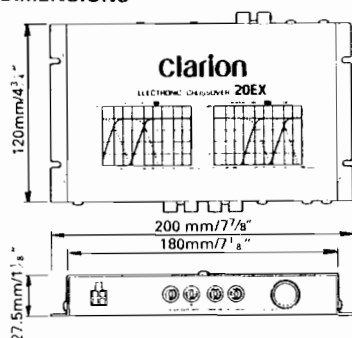
### ■ SPECIFICATIONS:

Crossover Frequency: "X1" 50Hz to 500Hz  
Times ten: "X10" 500Hz to 5kHz  
Crossover Slope: 12dB/Octave  
Frequency Response: 10Hz to 60kHz, -1dB  
Signal to Noise Ratio: 100dB  
Input Impedance: 47kohm  
Power Supply Voltage: DC 14.4V (10.8V to 15.6V allowable) Negative ground  
Current Consumption: 200mA  
Weight: 530g

### ■ COMPONENTS:

Main unit		1
ACC cord	653-0106-03	1
Plate nut	653-0104-30	4
Tapping screw	653-0104-29	4

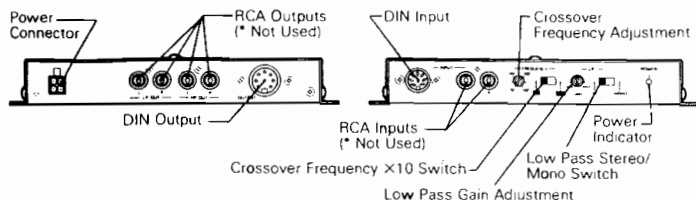
### DIMENSIONS



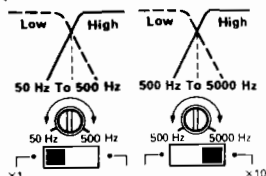
### ■ FEATURES:

- 2-Way Crossover
- Continuously Variable Crossover Frequency w/Time Ten Switch
- Adjustable Low Pass Gain
- Low Pass Stereo/Mono Switch
- Ground Loop Isolation Input Circuit
- Gold Plated RCA Inputs/Outputs
- Remote Turn-on Circuit
- Power-On LED

## ■ OPERATION:

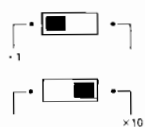


### 1) CROSSOVER FREQUENCY ADJUSTMENT



Adjust the crossover to match your system. The crossover frequency can be adjusted from 50 Hz to 500 Hz or from 500 Hz to 5000 Hz, with the combination of the crossover frequency adjustment and crossover frequency X10 switch.

### 2) CROSSOVER FREQUENCY X10 SWITCH



When the X1 position is selected your crossover frequency will range from 50 Hz to 500 Hz depending on the position of the crossover frequency adjustment.

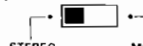
When the X10 position is selected your crossover frequency will range from 500 Hz to 5000 Hz depending on the position of the crossover frequency adjustment.

### 3) LOW PASS GAIN ADJUSTMENT



Adjust the low pass gain to tailor the low frequency to your system. You can adjust the gain from -10 dB to +10 dB maximum.

### 4) LOW PASS STEREO/MONO SWITCH



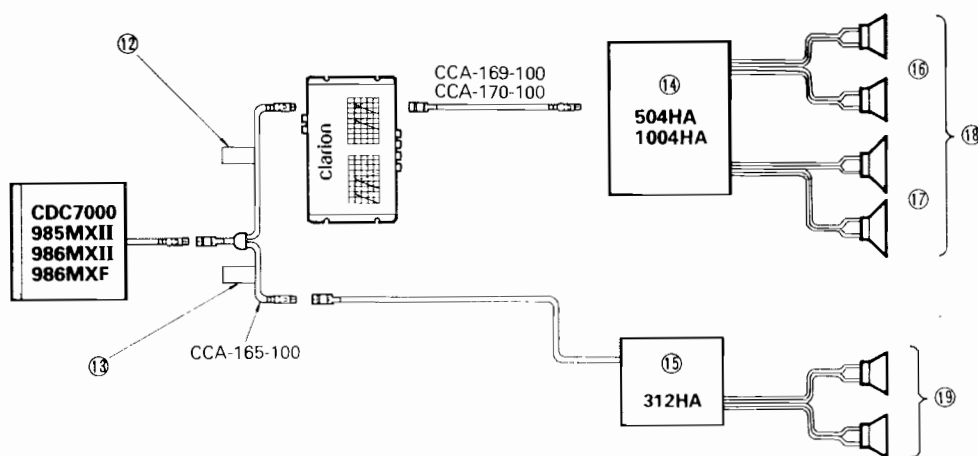
Select the stereo or mono position of the low pass output, for the best possible bass response in your system.

### 5) POWER INDICATOR

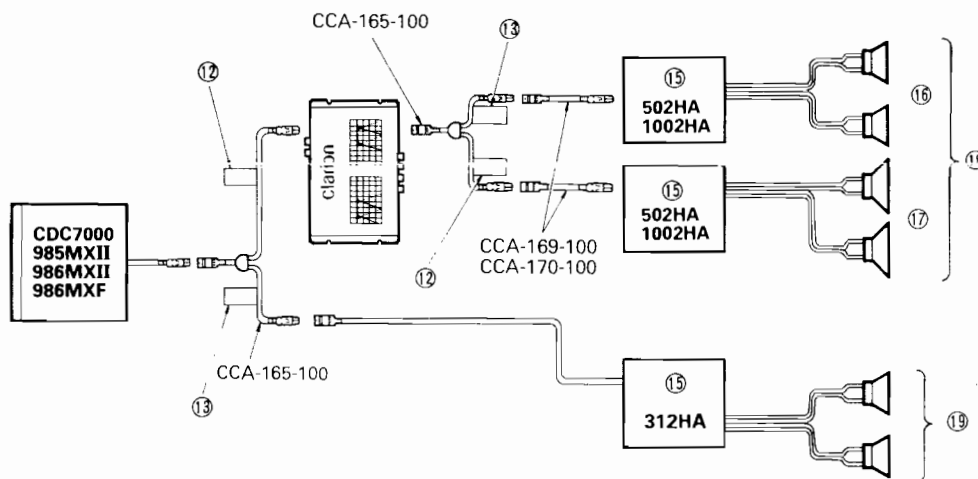


The power indicator will light up when the crossover is on.

## ■ EXAMPLES OF OVERALL WIRING:



⑳ Note:



㉑ Note:

- ⑫ TO REAR AMPLIFIER
- ⑬ TO FRONT AMPLIFIER
- ⑭ 4 CHANNEL POWER AMPLIFIER
- ⑮ 2 CHANNEL POWER AMPLIFIER
- ⑯ Mid Range/Tweeter
- ⑰ Woofer
- ⑱ Rear Speaker
- ⑲ Front Speaker

㉑ Note: 1) When using bass speakers in monaural such as with a subwoofer system, set the 20EX STEREO/MONO switch to the "MONO" side and the 4-channel amplifier mode selector to channel 3.

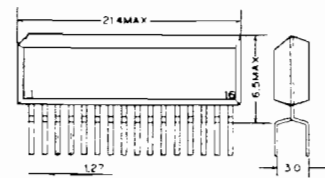
㉑ Note: 1) Use CCA-165-100 when using 2-channel amplifiers behind the 20EX. Connect the amplifier for mid and high ranges to the "TO FRONT AMPLIFIER" side and the amplifier for low ranges to the "TO REAR AMPLIFIER" side, as shown in the diagram.

2) When using bass speakers in monaural such as with a subwoofer system, set the 20EX STEREO/MONO switch to the "MONO" side and the mode selector for the low range amplifier to the "MONO" side.

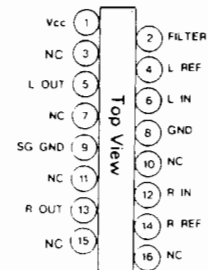
## ■ EXPLANATION OF IC's:

■ TA7424P 051-0744-01  
TA7424AP 051-0744-02 Ground Isolator

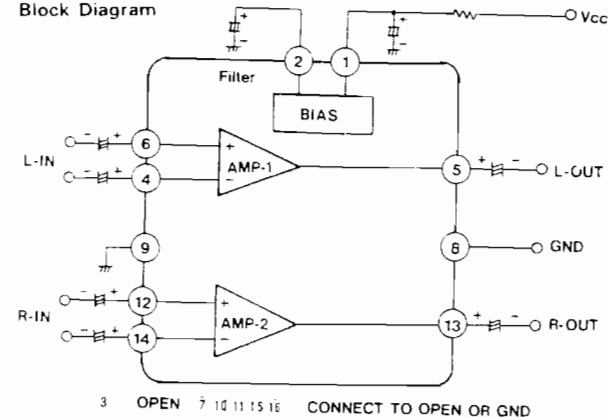
Outward Form



Terminal Connection

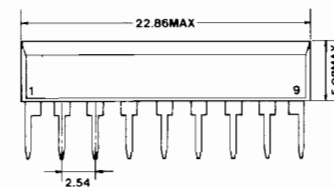


Block Diagram



■ μPC4570HA 653-0086-58 Dual OP. Amp.

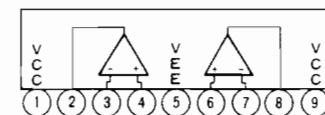
Outward Form



Features

- Phase compensator is built in.
- Total harmonic distortion (f = 20 Hz ~ 20 kHz): 0.002 %
- Slew rate: 7 V/μs
- Input offset voltage: 0.3 mV

Block Diagram

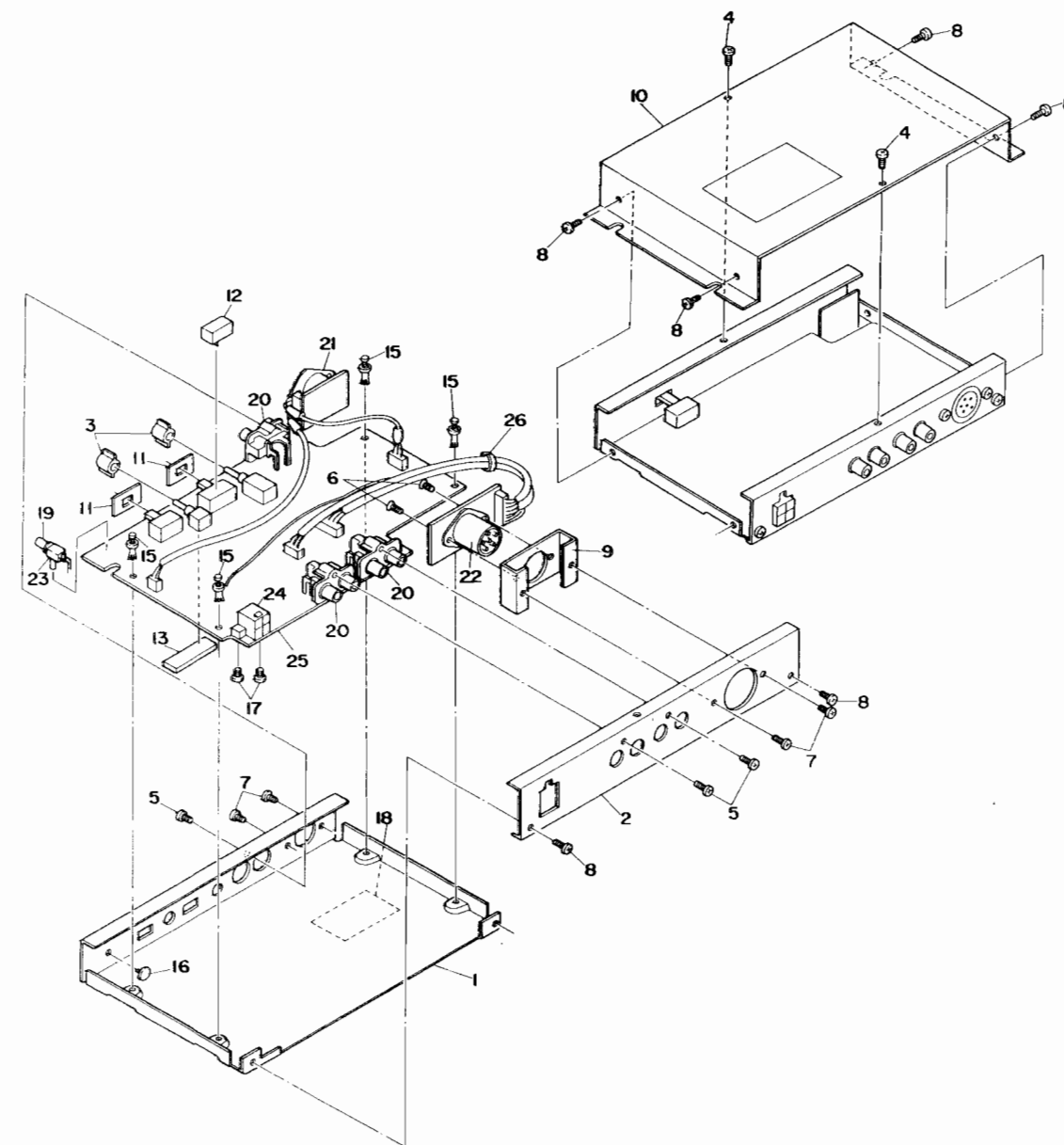


## ■ PARTS LIST:

◎ Electrical section

REF NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY	REF NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
LD801	653-0104-01	LED (SLP-136B) RED	1	C409a, b, 413a, b	173-1231-10	Polyester capacitor (0.012μF)	4
D802	653-0104-02	Diode (GZS-18Y)	1	C410a, b, 414a, b	173-2221-10	Polyester capacitor (2200pF)	4
D803 ~ 805	653-0104-03	Diode (1SS136)	3	C412a, b, 416a, b	173-3331-10	Polyester capacitor (0.033μF)	4
D801	653-0104-04	Diode (DSK10 B,C)	1	C425a, b, 426a, b	160-1012-05	Ceramic capacitor (100pF)	4
LD802, 891 ~ 894	001-0366-00	LED (LTZ-MR15)	5	C403a, b	160-4712-05	Ceramic capacitor (470pF)	2
L802	653-0104-05	Choke (RC885 1mH)	1	C407	160-1035-06	Ceramic capacitor (0.01μF)	1
L801	653-0104-06	Choke (E114)	1	C408a, b, 420a, b, 422a, b	160-2202-05	Ceramic capacitor (22pF)	6
VR402	653-0104-07	Variable resistor (50KB × 2)	1	C801, 802	160-1045-06	Ceramic capacitor (0.1μF)	2
VR401	653-0104-08	Variable resistor (20KC × 4)	1	C404a, b, 418a, b, 419a, b	182-1063-52	Electrolytic capacitor (35V 10μF)	6
SW401	653-0104-09	Slide switch	1	C805	182-1073-22	Electrolytic capacitor (10V 100μF)	1
SW402	653-0104-10	Slide switch ST/MO	1	C423a, b, 424a, b	182-1053-62	Electrolytic capacitor (50V 1μF)	4
IC402 ~ 406	653-0086-58	IC (μPC4570HA)	5	C406, 803, 806	179-2273-33	Electrolytic capacitor (16V 220μF)	3
IC401	051-0744-02	IC (TA7424AP)	1	C401a, b, 402a, b, 417a, b, 421a, b	182-2253-62	Electrolytic capacitor (50V 2.2μF)	8
TR805	101-0985-00	Transistor (2SB985)	1	C405	182-3363-32	Electrolytic capacitor (16V 33μF)	1
TR801, 803, 804	102-2785-00	Transistor (2SC2785)	3	C807	182-4763-32	Electrolytic capacitor (16V 47μF)	1
TR401a, b, 402a, b	102-3327-00	Transistor (2SC3327)	4	CN3	653-0104-14	Cord ass'y (5P)	1
C411a, b, 415a, b	173-1041-10	Polyester capacitor (0.1μF)	4	CN2	653-0104-15	Cord ass'y (7P)	1
C804	173-1042-10	Polyester capacitor (0.1μF)	1				

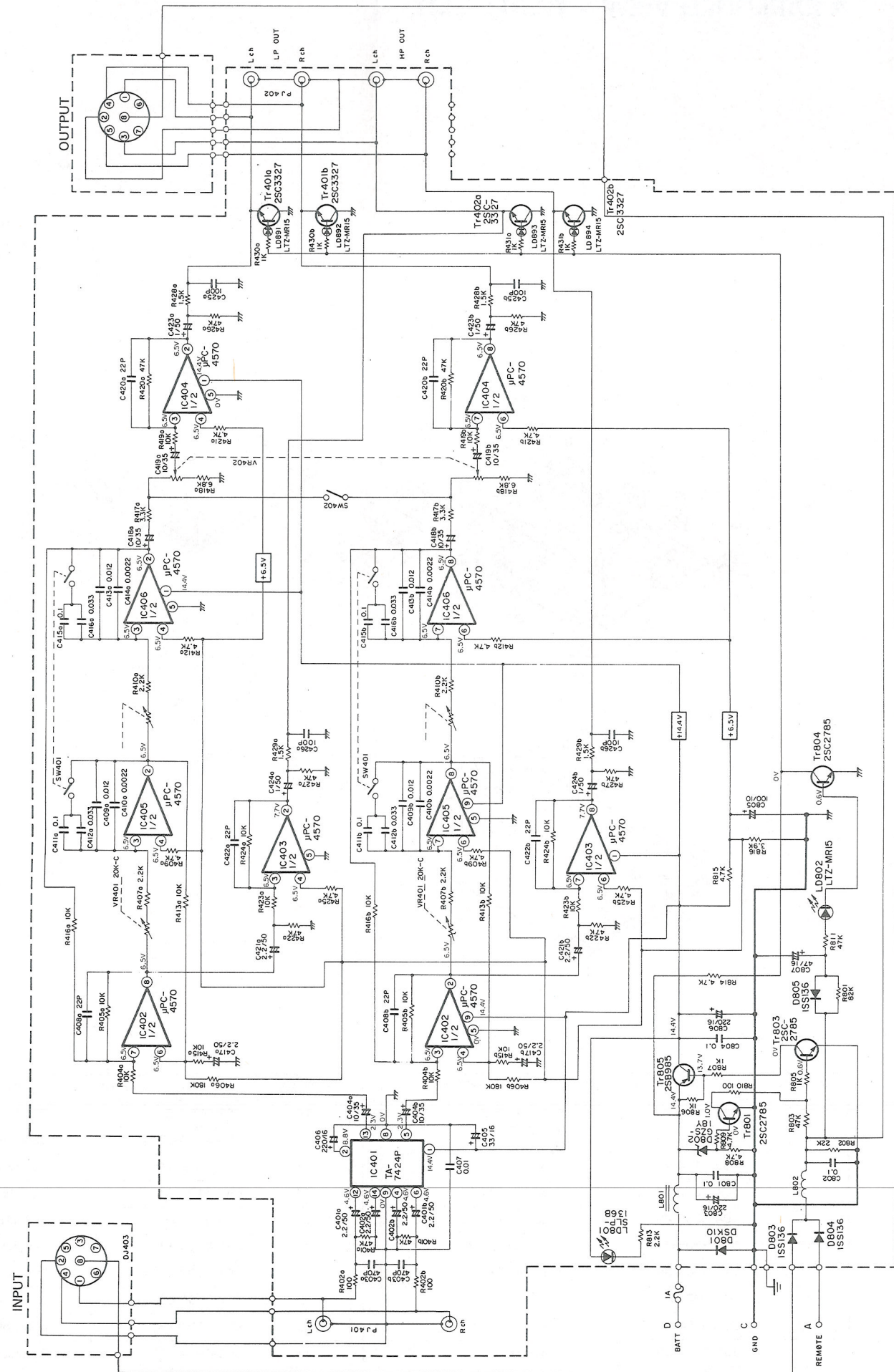
## ■ EXPLODED VIEW • PARTS LIST:



REF NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY	REF NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	653-0104-19	Lower case	1	15	653-0104-27	Rivet	4
2	653-0104-20	Rear panel	1	16	653-0104-28	LED lens	1
3	653-0104-21	Knob	2	17	704-3008-11	Screw (3×8)	2
4	704-3008-79	Screw (3×8)	2	18	653-0106-04	Set Plate	1
5	704-3008-89	Screw (3×8)	3	19	653-0104-01	LED (Red)	1
6	704-3006-41	Screw (3×6)	2	20	653-0104-11	Pin jack (2P)	3
7	714-3006-89	Screw (3×6)	4	21	653-0106-01	DIN jack (8P)	1
8	704-3006-89	Screw (3×6)	6	22	653-0106-02	DIN plug (8P)	1
9	653-0104-22	Bracket (DIN plug)	1	23	653-0104-16	LED holder	1
10	653-0104-23	Bonnet	1	24	653-0104-17	Connector (4P)	1
11	653-0104-24	Shade	2	25	653-0104-18	PWB	1
12	653-0104-25	Cushion A	1	26	335-0833-01	Clamp	1
13	653-0104-26	Cushion B	1				



# ■ CIRCUIT DIAGRAM:



# ■ PRINTED WIRING BOARD:

